

## CLAIMS

**What is claimed is:**

1. An audio system for use in a vehicle, comprising:  
5 a plurality of audio sources connected to an amplifier, where the audio sources are operable to generate a plurality of audio output signals that are supplied to the amplifier; and  
a control unit connected with the amplifier for adjusting a balance setting associated with a plurality of speakers based on each of the respective audio sources  
10 that generates the audio output signal, where the control unit includes a user interface for setting the balance setting of each audio source, where the control unit further adjusts the balance setting based upon a user preference for each audio source.
2. The audio system of claim 1 where the balance setting is further adjusted to  
15 output an acoustic driver information message to a speaker positioned near a driver of the vehicle.
3. The audio system of claim 2 where audio output signals from other audio  
20 sources are muted from the speaker positioned nearest the driver while the acoustic driver information message is being played on the speaker positioned nearest the driver.
4. The audio system of claim 2 where audio output signals from other audio  
25 sources play uninterrupted by the acoustic driver information message in at least one speaker not positioned nearest the driver.
5. The audio system of claim 4 where the acoustic driver information message is  
30 muted from the audio output signals sent to the speakers not positioned nearest the driver.

6. The audio system of claim 1 where the control unit includes an audio manager module operable to control the balance setting of the amplifier connected to the speakers.

5 7. The audio system of claim 1 where the control unit includes a means for adjustment operable to allow a user to adjust the balance setting of the audio sources.

8. The audio system of claim 1 where the control unit includes a user interface module operable to allow a user to adjust the balance setting of the audio sources using a touch-screen display.

10 9. The audio system of claim 8 where the user interface module generates a balance setting graphical user interface on the touch-screen display that allows a user to adjust the balance setting.

15 10. The audio system of claim 1 where the balance setting for each respective audio source is stored in the control unit.

20 11. The audio system of claim 1 where the audio source may be selected from a group of audio sources including a navigation system, a tuner, a remote terminal, a compact disc player, a digital video disc player, an MP3 player, a radio data service tuner, a television, a satellite radio, an Internet radio, a cassette player, and a text-to-speech system.

25 12. A computer program product for use with an audio system in a vehicle, comprising:

computer readable program code for controlling a plurality of audio sources capable of generating a plurality of audio output signals; and

30 computer readable program code for allowing a user to set a balance setting for a plurality of speakers for each respective audio source with a user interface.

13. The computer program product of claim 12, further comprising computer readable program code for audibly reproducing the audio output signals on the speakers based upon the respective balance setting of each of the audio sources.

5 14. The computer program product of claim 12 where at least one audio output signal comprises an acoustic driver information message generated from a respective audio source.

10 15. The computer program product of claim 14 where the respective audio source comprises a navigation system.

15 16. The computer program product of claim 14 where the balance setting generates the acoustic driver information message in a speaker nearest a driver of the vehicle.

17. The computer product of claim 15 where the balance setting reduces audio output signals from audio sources other than the navigation system.

20 18. The computer program product of claim 15 where the balance setting mutes audio output signals from audio sources other than the navigation system in the speaker nearest the driver of the vehicle.

25 19. The computer program product of claim 12 where the speakers comprise a front and rear set of loudspeakers.

20. The computer program product of claim 12, further comprising computer readable program code for generating a graphical user interface on a display capable of allowing the user to adjust the balance setting.

30 21. The computer program product of claim 12 where the audio sources may be selected from a group of audio sources including a navigation system, a tuner, a remote terminal, a compact disc player, a digital video disc player, an MP3 player, a

radio data service tuner, a television, a satellite radio, an Internet radio, a cassette player, and a text-to-speech system.

5 22. The computer program product of claim 12, further comprising computer readable program code for setting the balance setting for each audio source based on a passenger category.

23. The computer program product of claim 22 where the passenger category may include a driver, a co-driver, at least one child, or at least one adult passenger.

10 24. An audio system for a vehicle, comprising:  
a plurality of audio sources capable of generating a plurality of audio output signals;  
an amplifier connected to the audio sources for receiving the audio output  
15 signals generated by the audio sources;  
a plurality of speakers connected to the amplifier; and  
a head unit connected to the amplifier operable to control a balance setting of  
the speakers for each respective audio source that is generating the audio output  
signals, where the head unit is operable to generate a user interface for setting the  
20 balance setting of each audio source.

25 25. The audio system of claim 24 where the amplifier includes a balance setting circuit that is controlled by the head unit.

26. The audio system of claim 24 where the head unit includes a user interface module for allowing a user to adjust the balance setting of each audio source.

27. The audio system of claim 24 where the user interface is generated on a touch-screen display.

28. The audio system of claim 24 where the head unit includes an audio manager module operable to control the amplifier based upon the balance setting for each respective audio source.

5 29. The audio system of claim 24 where one audio source comprises a navigation system for generating an acoustic driver information message and the balance setting is set to audibly reproduce the acoustic driver information message only in a respective speaker positioned near a driver of the vehicle.

10 30. The audio system of claim 29 where other audio sources continue in a predetermined number of other speakers uninterrupted by the acoustic driver information message.

15 31. The audio system of claim 24 where the audio sources may be selected from a group of audio sources including a navigation system, a tuner, a remote terminal, a compact disc player, a digital video disc player, an MP3 player, a radio data service tuner, a television, a satellite radio, an Internet radio, a cassette player, and a text-to-speech system.

20 32. A method of controlling balance settings in an audio system for a vehicle, comprising the steps of:

generating a plurality of audio output signals from a plurality of audio sources;

transmitting the audio output signals from the audio sources to an amplifier;

25 adjusting a balance setting of each respective audio source with a head unit connected to the amplifier; and

reproducing the audio output signals on a speaker based upon the balance setting of each respective audio source.

30 33. The method of claim 32 where the balance setting of each audio source is adjusted by an occupant of the vehicle with a graphical user interface.

34. The method of claim 32 where the graphical user interface includes a vertical and horizontal scroll bar for adjusting the balance setting.

35. The method of claim 33 where the graphical user interface is generated on a touch-screen display in the vehicle.

36. The method of claim 32 where a respective audio output signal comprises an acoustic driver information message generated by a navigation system.

37. The method of claim 36 where the balance setting is positioned such that the acoustic driver information message is reproduced on a speaker chosen by the driver.

38. The method of claim 32 where the audio sources may be selected from a group of audio sources including a navigation system, a tuner, a remote terminal, a compact disc player, a digital video disc player, an MP3 player, a radio data service tuner, a television, a satellite radio, an Internet radio, a cassette player and a text-to-speech system.

39. An audio system for use in a vehicle comprising:  
a plurality of audio sources connected to an amplifier;  
a control unit connected to the amplifier;  
a passenger category selection module located on the control unit for selecting a passenger category; and  
a user interface module located on the control unit for adjusting a balance setting of a plurality of speakers for the selected passenger category based on a respective audio source that generates an audio output signal.

40. The audio system of claim 39 further comprising audio an audio manager module for controlling the amplifier to audibly reproduce the audio output signal in a predetermined number of speakers based upon the balance setting for each of the audio sources.

41. The audio system of claim 39 where the passenger category selection module is operable to generate a balance setting graphical user interface that is used to adjust the balance settings of the audio sources.

5 42. The audio system of claim 39 where the passenger category may be selected from a group of passenger categories including a driver category, a co-driver category, a backseat passenger category and a children category.

10 43. A method of controlling balance settings in an audio system for a vehicle, comprising the steps of:

selecting a passenger category;

adjusting a balance setting of at least one audio source for the passenger category; and

15 reproducing audio output signals based on the balance setting for each audio source.

20 44. The method of claim 43 where the passenger category is selected through a graphical user interface generated by a passenger category selection module located on the control unit.

45. The method of claim 43 where the passenger category may be selected from a group of passenger categories including a driver category, a co-driver category, a backseat passenger category and a children category.

25 46. In a vehicle navigation system having a graphical user interface including a display and selection device, a method of providing and selecting from a menu on the display, the method comprising:

30 retrieving a set of menu entries associated with the menu, where each of the menu entries represents at least one balance setting associated with each one of a plurality of audio sources;

displaying at least one of the balance settings associated with each audio source;

receiving a menu entry selection signal indicative of the selection device pointing at a selected menu entry associated with the balance setting from the set of menu entries; and

in response to the menu entry selection signal, adjusting the balance setting associated with the audio source as indicated by the menu entry selection signal.

47. The method of claim 46 where the display and selection device comprise a touch-screen display.

48. The method of claim 47 where a horizontal and vertical scroll bar generated on the touch-screen display are used to adjust the balance setting of each audio source.

49. The method of claim 46 further comprising the step of reproducing audio output signals on a plurality of speakers using the balance setting provided for each audio source.